

Distribution Coefficients of Phenol and Styrene Between Water and Supercritical Carbon Dioxide

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The experimental investigation of distribution coefficients of phenol and styrene between water and supercritical fluid carbon dioxide on isotherms 333.15 and 323.15 K in a pressure range 9.5 to 17.5 MPa is carried out. The measurements were carried out on flow instruments with a repeated recycling of fluid. A strong change of distribution coefficients of hydrocarbons in a narrow interval of pressure near the critical temperature of carbon dioxide is observed. It indicates a key opportunity of extraction of phenol and styrene from water by supercritical carbon dioxide and further separation of solvent. The flash algorithm of calculation at fixed values of temperature and pressure with the use of Soave equation of state is applied for modeling of the distribution coefficients. The composition of a water phase thus was not fixed. The empirical parameters of pair intermolecular interaction of components of ternary system are obtained. Such parameters differ from parameters obtained for the relevant binary systems, because of taking into account presence of the third component.